



NATIONAL CYBER WORKFORCE AND EDUCATION STRATEGY

CYBER PATHWAYS FOR EDUCATORS OF INSTITUTIONS OF HIGHER LEARNING (IHL)

Two-year and four-year colleges and universities serve a critical role in the development of the cyber workforce and the American economy. The National Cyber Workforce and Education Strategy (NCWES) calls for ecosystems of stakeholders, including community and technical colleges and universities, to work together to prepare the workforce across all industries with the cyber skills needed to securely design, build, and operate information technology (IT) and operational technology (OT) systems. Community and technical colleges and universities should consider the actions below as a starting point for transforming higher education to achieve the goals in the Strategy.

EXPAND YOUR LOCAL ECOSYSTEM

Host or join a reception to connect with employers, school districts, community and philanthropic organizations, and government programs in order to identify new resources in your local area, promote programs, communicate needs, and expand your network of partners. Conduct virtual events to reach stakeholders outside your local area and update your ecosystem on your activities and resources. Join industry and community ecosystems to diversify your recruitment efforts, and leverage cyber experts from your community to support your efforts.

LEVERAGE COMMUNITY AND TECHNICAL COLLEGES

Meet with local businesses to explore opportunities for students to provide low-cost or free services to help local businesses design, build, and secure their cyber systems. Invite employers to an open house to highlight the value of community and technical colleges to the local economy as a path to well-paying careers. Agriculture, culinary, or healthcare programs, for example, can use the events to demonstrate cyber career opportunities in their industries. Provide cyber curriculum development and professional development services for local school systems to improve the alignment of high school and college programs. Find content and curricula through Centers of Academic Excellence in Cybersecurity (CAE-C), a program that includes over 400 colleges and universities with low-cost and no-cost cyber resources. Search online for the [“CAE Community”](#) website to learn more.

While the Strategy contains lines of effort for all stakeholders, some of the key lines of effort for educators of higher learning include:

- 2.1.1 Expand and support cyber education ecosystems.
- 2.2.2 Enhance applied cyber content in interdisciplinary education programs.
- 2.2.3 Increase the availability of curricula for cyber education programs.
- 2.2.4 Increase concurrent and transferrable credit opportunities.
- 2.3.4 Increase participation in advanced degree programs to expand the cyber faculty pipeline.



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ADD CYBER TO CAREER FAIRS

Work across disciplines to host career fairs that highlight cyber career pathways in industry sectors, such as “Cyber + Healthcare,” “Cyber + Manufacturing,” “Cyber + Education,” or “Cyber + Finance” career fairs. Use the events as an opportunity to increase collaboration between faculty and across disciplines. Open the job fairs to the public and invite small businesses to participate. Incorporate work-based learning, internships, apprenticeships, and mentoring into the design of the fairs. Connect with government agencies to include career opportunities in the Federal, state, and local governments. Search online for “cyber + SFS” for the [CyberCorps: Scholarship for Service](#) program for additional learn and earn opportunities.

CYBER PATHWAYS FOR EDUCATORS OF PRE K-12 EDUCATION

Educators are crucial to building the foundational skills, including cyber skills, necessary to enable a thriving society and workforce. The work of building cyber skills, however, cannot rest solely on the shoulders of educators. The National Cyber Workforce and Education Strategy (NCWES) calls for ecosystems of stakeholders to support educators in preparing a skilled cyber workforce and equipping every American with the foundational cyber skills needed to fully access all of the resources in our interconnected society. The actions below are intended to spark ideas and are a starting point to realizing the transformations outlined in the Strategy.

EXPAND YOUR LOCAL ECOSYSTEM

Host or join a reception to connect with local businesses, postsecondary institutions, community and faith-based organizations, families, and government programs to discover resources available in your local area, share successes, convey needs, and expand your network of partners. Consider virtual events to reach stakeholders outside your local area or create an online community to keep your ecosystem informed of your activities and needs. Become familiar with other ecosystems and leverage their cyber knowledge and resources to support your efforts. Examples of active ecosystems are included in section 2.1.1 of the Strategy.

CONNECT WITH EDUCATION PARTNERS

Arrange regular meetings where educators and administrators in PreK-12, postsecondary, and informal education settings can share ideas, opportunities, and needs. Casual conversations can spark ideas for collaboration on grants, expanding the reach of programs, identifying work-based learning opportunities, or combining resources to improve outcomes. Two-year and four-year colleges can be valuable resources for

While the Strategy contains lines of effort for all stakeholders, some of the key lines of effort for educators of pre K-12 include:

1.2.1 Promote the economic and societal benefits of foundational cyber skills.

2.1.4 Protect learners in safe and secure cyber learning environments.

2.2.2 Enhance applied cyber content in interdisciplinary education programs.

2.2.5 Expand innovative models for academic credit.

2.4.1 Enhance the cyber workforce talent pipeline in underrepresented communities.

3.2.1 Leverage community colleges to enhance cyber workforce diversity and better meet local workforce needs.



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curriculum development and professional development. There are more than 400 colleges and universities across America that are designated as Centers of Academic Excellence in Cybersecurity (CAE-C) that can provide low-cost and no-cost cyber curriculum and professional development resources to educators at all grade levels. Visit the [CAE Community website](#) to find institutions in your area.

ACCESS ONLINE CONTENT AND CURRICULA

Explore online libraries of cyber modules, courses, and programs in a range of learning modalities and levels. Search online for “cyber + [NICE](#),” “cyber + [NICCS](#),” or “cyber + [CSSIA](#)” to access federally-funded portals with free and low-cost cyber education content. Convene ecosystem stakeholders, share course content and request assistance from employers and cyber experts to help align the skills that are being taught with industry needs. Think of creative ways to teach cyber skills that engage populations underrepresented in cyber professions, such as through robotics, art, music, or community service. Administrators can facilitate joint planning sessions with cyber experts and across disciplines to design innovative and engaging competency-based learning experiences.



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FEDERAL CYBER RESOURCES FOR EDUCATORS OF INSTITUTIONS OF HIGHER LEARNING (IHL)

The Federal government offers a range of programs for community colleges, four-year colleges and universities, graduate institutions, and other workforce training providers to educate and equip the next generation of cyber workers in America. Federal government programs and resources to support institutions of higher education include: professional development opportunities, curriculum and instruction guidance, research and development grants, and national best practice competitions among many other programs. In addition, the National Centers of Academic Excellence program delivers cyber education to over 400 community colleges and four-year institutions.

HELPFUL LINKS

Education and Training

Department of Education

[Minority Science and Engineering Improvement Program](#)

[Supporting Effective Educator Development \(SEED\)](#)

[Raise the Bar: Lead the World](#)

[Career Z Challenge: Expanding Work-Based Learning Opportunities for Gen Z](#)

[Native American Career and Technical Education Program](#)

[Native Hawaiian Career and Technical Education Program](#)

Department of Energy

[DOE STEM](#)

Department of Defense

[Center for Development of Security Excellence \(CDSE\)](#)

[DOD STEM](#)

[STEM Careers Cyber](#)

[CYBERPATRIOT*](#)

[AEOP - ECYBERMISSION*](#)

[AEOP – High School Apprenticeship Program \(HSAP\)*](#)

[DOD STEM Community College Consortium](#)

Department of Homeland Security – Cybersecurity and Infrastructure Security Agency

[Cyber Defense Education and Training \(CDET\)](#)

[CISA: National Initiative for Cybersecurity Careers and Studies \(NICCS\)](#)

Department of Commerce – National Institute of Standards and Technology

[Regional Alliances and Multistakeholder Partnerships to Stimulate \(RAMPS\) Cybersecurity Education and Workforce Development](#)



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[Cyberseek.org](https://www.cyberseek.org)*

[National K12 Cybersecurity Education Conference](#)*

[NICE Conference and Expo](#)*

[National Cybersecurity Career Ambassadors Program](#)

[Cybersecurity Career Week](#)

[NICE Framework and Resource Center](#)

[US Cyber Games](#)*

[Free or Low Cost Cybersecurity Resources](#)

[Cybersecurity Apprenticeship Finder](#)

[NICE Challenge Project](#)*

Economic Development Administration

[Science, Technology, Engineering, and Math \(STEM\) Challenge](#)

Department of Labor

[Cybersecurity Apprenticeships](#)

[Apprenticeship Sprint](#)

[Youth Apprenticeships](#)

[National Apprenticeship Week](#)

Department of Labor – Employment and Training Administration

[DOL/ETA: Cybersecurity Competency Model](#)*

National Science Foundation

[National Cybersecurity Training and Education Center](#)

[Secure and Trustworthy Cyberspace](#)

[Advanced Technological Education \(ATE\) Community College focus](#)

National Security Agency

[National Centers of Academic Excellence in Cybersecurity \(NCAE-C\) Program](#)

[National Security Agency \(NSA\) Student Programs](#)

[National Security Agency's GENCYBER Program](#)

[Center of Academic Excellence \(CAE\)-Cyber Operations Summer Intern Program](#)

[Cyber Kids Day](#)

[NSA Codebreaker Challenge](#)

[NSA-funded CyberSkills2Work Program](#)*

[NSA Careers Portal](#)

United States Agency for International Development

[Innovative Workforce Activity Grant Program](#)



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Veterans Affairs

[VA-Office of Information and Technology \(OIT\) Career Development Portal](#)

Scholarships

Department of Education

[Graduate Assistance in Areas of National Need](#)

Department of State

[American Association for the Advancement of Science \(AAAS\) Science and Technology Policy Fellowship Program*](#)

National Science Foundation

[Cybercorps: Scholarship for Services \(SFS\)](#)

[Cybercorps® Scholarship for Service \(SFS\)](#)

Public Service

Office of Personnel Management

[OPM: Cybercareer.gov](#)

**An asterisk indicates a government-affiliated program that may receive funding from the federal government.*

For more information about these Federal Cyber Resources, please reach out to the Office of the National Cyber Director's Cyber Workforce Directorate at workforce@ncd.eop.gov.



NATIONAL CYBER WORKFORCE AND EDUCATION STRATEGY

FEDERAL CYBER RESOURCES FOR EDUCATORS OF PRE K-12

The Federal government offers a range of programs for Pre-K through 12 educators and schools to educate and equip the next generation of cyber workers in America. Federal government programs and resources to support Pre-K-12 educators include professional development opportunities, curriculum and instruction guidance, and national best practice competitions among many other programs.

HELPFUL LINKS

Education and Training

Department of Education

[Career and Technical Education \(CTE\)-Cyber Net](#)

[Presidential Cybersecurity Educator Award](#)

[Minority Science and Engineering Improvement Program](#)

[Innovation and Modernization Program](#)

[Raise the Bar: Lead the World](#)

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[STEM Careers Cyber](#)

[CYBERPATRIOT*](#)

[AEOP - ECYBERMISSION*](#)

[AEOP – High School Apprenticeship Program \(HSAP\)*](#)

[AEOP – Research and Engineering Apprenticeship Program \(REAP\)*](#)

[AEOP – Undergraduate Research Apprenticeship Program \(URAP\)*](#)

[DOD STEM Community College Consortium](#)

Department of Homeland Security – Cybersecurity and Infrastructure Security Agency

[Cyber Defense Education and Training \(CDET\)](#)

[CISA: National Initiative for Cybersecurity Careers and Studies \(NICCS\)](#)

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